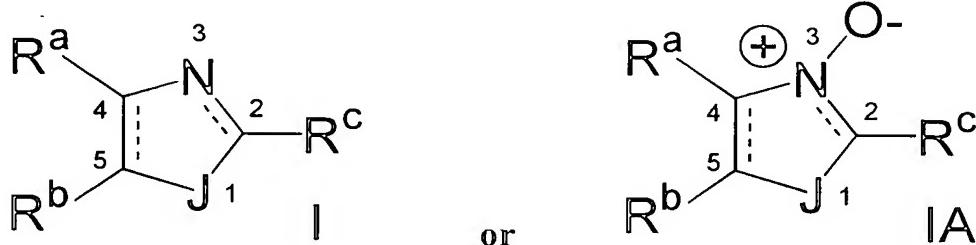


What is claimed:

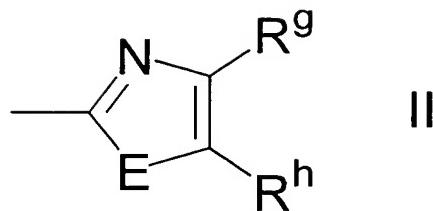
1. A method of decreasing intraocular pressure or improving ocular accommodation in an animal, including a human, comprising administering an intraocular pressure decreasing amount or ocular accommodation improving amount of a compound of the formula I or IA,



wherein:

- a. J is oxygen, sulfur, or N-R<sup>d</sup>;
  - 10 b. the carbon 2 to nitrogen bond is a double bond except when R<sup>c</sup> is oxo;
  - c. the bond between carbons 4 and 5 is a single bond or a double bond;
  - d. R<sup>a</sup> and R<sup>b</sup> are
2. independently selected from hydrogen, acylamino, acyloxyalkyl, alkanoyl, alkanoylalkyl, alkenyl, alkoxy, alkoxycarbonyl, alkoxycarbonylalkyl, alkyl, alkylamino, (C<sub>1</sub>-C<sub>3</sub>)alkylenedioxy, allyl, amino, ω-alkylenesulfonic acid, carbamoyl, carboxy, carboxyalkyl (which alkyl can be substituted with alkyloxyimino), cycloalkyl, dialkylamino, halo, hydroxy, (C<sub>2</sub>-C<sub>6</sub>)hydroxyalkyl, mercapto, nitro, sulfamoyl, sulfonic acid, alkylsulfonyl, alkylsulfinyl, alkylthio, trifluoromethyl, morpholin-4-yl, thiomorpholin-4-yl, piperidin-1-yl, 4-[C<sub>6</sub> or C<sub>10</sub>]arylpiperidin-1-yl, 4-[C<sub>6</sub> or C<sub>10</sub>]arylpiperazin-1-yl, Ar {wherein, consistent with the rules of aromaticity, Ar is C<sub>6</sub> or C<sub>10</sub> aryl or a 5- or 6-membered heteroaryl ring, wherein the 6-membered heteroaryl ring contains one to three atoms of N, and the 5-membered heteroaryl ring contains from one to three atoms of N or one atom of O or S and zero to two atoms of N, each heteroaryl ring can be fused to a substituted benzene, pyridine, pyrimidine, pyrazine, pyridazine, or (1,2,3)triazine (wherein the ring fusion is at a carbon-carbon double bond of Ar)}, Ar-alkyl, ArO-, ArSO<sub>2</sub>-, ArSO-, ArS-, ArSO<sub>2</sub>NH-, ArNH, (N-Ar)(N-alkyl)N-, ArC(O)-,

- ArC(O)NH-, ArNH-C(O)-, and (N-Ar)(N-alkyl)N-C(O)-, or together R<sup>a</sup> and R<sup>b</sup> comprise methylenedioxy-; or
- 2. together with their ring carbons form a C<sub>6</sub>- or C<sub>10</sub>- aryl fused ring; or
  - 3. together with their ring carbons form a C<sub>5</sub>-C<sub>7</sub> fused cycloalkyl ring having up to two double bonds including any fused double bond of the containing group, which cycloalkyl ring can be substituted by one or more of the group consisting of alkyl, alkoxycarbonyl, amino, aminocarbonyl, carboxy, fluoro, or oxo; or
  - 4. together with their ring carbons form a fused 5- or 6-membered heteroaryl ring, wherein the 6-membered heteroaryl ring contains one to three atoms of N, and the 5-membered heteroaryl ring contains from one to three atoms of N or one atom of O or S and zero to two atoms of N; or
  - 5. together with their ring carbons form a fused five to eight membered second heterocycle, wherein the fused heterocycle consists of ring atoms selected from the group consisting of carbon, nitrogen, oxygen, sulfur, and S(O)<sub>n</sub>, wherein n is 1 or 2;
  - e. R<sup>d</sup> is alkyl, alkenyl, hydrogen, or Ar;
  - f. R<sup>c</sup> is
    - 1. oxo (when Δ<sup>2,3</sup> is not present), or (when Δ<sup>2,3</sup> is present) hydrogen, alkyl, alkylthio, hydrogen, mercapto, amino, amino(C<sub>1</sub>-C<sub>5</sub>)alkyl, or amino(C<sub>6</sub> or C<sub>10</sub>)aryl, or wherein the amino of the last three groups can be substituted with
      - (a) Ar,
      - (b) Ar-Z-, Ar-alkyl-Z-, Ar-Z-alkyl, Ar-amino-Z-, Ar-aminoalkyl-Z-, or Ar-oxyalkyl-Z-, wherein Z is a carbonyl or -SO<sub>2</sub>-
      - (c) formyl or alkanoyl,
    - 2. -NHC(O)(CH<sub>2</sub>)<sub>n</sub>-D-R<sup>e</sup>R<sup>f</sup>, wherein D is oxygen, sulfur or nitrogen, wherein where D is nitrogen n is 0,1 or 2, but when D is oxygen or sulfur n=1 or 2, and R<sup>f</sup> is present only when D is nitrogen,
      - wherein
        - (a) R<sup>e</sup> is
          - (1) Ar,
          - (2) a group of the formula



wherein E is sulfur, oxygen, or N-R<sup>i</sup>, and R<sup>g</sup>, R<sup>h</sup> and R<sup>i</sup> are independently the same as R<sup>a</sup>, R<sup>b</sup> and R<sup>d</sup>, respectively,

- 5                             (3) a C<sub>3</sub>-C<sub>8</sub> cycloalkyl ring having up to one double bond with the proviso  
that the carbon linking the cycloalkyl ring to D is saturated, which  
cycloalkyl ring can be substituted by one or more alkyl-,  
alkoxycarbonyl-, amino-, aminocarbonyl-, carboxy-, fluoro-, or oxo-  
substituents;
- 10                           (4) a 5- or 6-membered heteroaryl ring containing at least one and up to  
three atoms of N for the 6-membered heteroaryl rings and from one to  
three atoms of N or one atom of O or S and zero to two atoms of N for  
the 5-membered heteroaryl rings;
- 15                           (5) hydrogen, (C<sub>2</sub>-C<sub>6</sub>)hydroxyalkyl, alkanoylalkyl, alkyl,  
alkoxycarbonylalkyl, alkenyl, carboxyalkyl (which alkyl can be  
substituted with alkoxyimino), alkoxy carbonyl, a group Ar<sup>φ</sup> which is  
C<sub>6</sub>- or C<sub>10</sub>- aryl or a 5- or 6-membered, or 9- or 10-membered  
heteroaryl (wherein the heteroatom is one oxygen, one sulfur or one  
nitrogen) or Ar<sup>φ</sup>-alkyl; and
- 20                           (b) R<sup>f</sup> is independently hydrogen, (C<sub>2</sub>-C<sub>6</sub>)hydroxyalkyl, alkanoylalkyl, alkyl,  
alkoxycarbonylalkyl, alkenyl, carboxyalkyl (which alkyl can be  
substituted with alkoxyimino), alkoxy carbonyl, Ar<sup>φ</sup>, or Ar<sup>φ</sup>-alkyl;  
wherein aryl, Ar, or Ar<sup>φ</sup> can be substituted with, in addition to any substitutions  
specifically noted one or more substituents selected from the group of acylamino,  
25                           acyloxyalkyl, alkanoyl, alkanoylalkyl, alkenyl, alkoxy, alkoxy carbonyl,  
alkoxycarbonylalkyl, alkyl, alkylamino, (C<sub>1</sub>-C<sub>3</sub>)alkylenedioxy, alkylsulfonyl,  
alkylsulfinyl, ω-alkylenesulfonic acid, alkylthio, allyl, amino, ArC(O)-,  
ArC(O)NH-, carboxy, carboxyalkyl, cycloalkyl, dialkylamino, halo,  
trifluoromethyl, hydroxy, (C<sub>2</sub>-C<sub>6</sub>)hydroxyalkyl, mercapto, nitro, ArO-, Ar-, Ar-

alkyl-, sulfamoyl, sulfonic acid, 1-pyrrolidinyl, 4-[C<sub>6</sub> or C<sub>10</sub>]arylpiperazin-1-yl-, 4-[C<sub>6</sub> or C<sub>10</sub>]arylpiperidin-1-yl, azetidin-1-yl, morpholin-4-yl, thiomorpholin-4-yl, piperidin-1-yl; and

heterocycles, except those of Ar and Ar<sup>†</sup>, can be substituted with in addition to any  
5 substitutions specifically noted one or more substituents selected from acylamino, alkanoyl, alkoxy, alkoxycarbonyl, alkoxycarbonylalkyl, alkyl, (C<sub>1</sub> to C<sub>3</sub>)alkylenedioxy, alkylamino, alkylsulfonyl, alkylsulfinyl, alkylthio, amino, ArC(O)-, ArO-, Ar-, Ar-alkyl, carboxy, dialkylamino, fluoro, fluoroalkyl, difluoroalkyl, hydroxy, mercapto, oxo, sulfamoyl, trifluoromethyl, 4-[C<sub>6</sub> or C<sub>10</sub>]arylpiperidin-1-yl and 4-[C<sub>6</sub> or C<sub>10</sub>]arylpiperazin-1-yl;

10 or a pharmaceutically acceptable salt of said compounds,

with the proviso that where the compound of formula I is administered to decrease intraocular pressure at least one compound of formula I administered in effective amount is not a thiazole substituted on a ring carbon sulfonamide, (the amide of which can be substituted) that has carbonic anhydrase inhibiting activity.

2. The method of claim 1, comprising administering an intraocular pressure decreasing amount or ocular accommodation improving amount of a compound of the formula I, wherein the bond between carbons 4 and 5 is a single bond.

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3. The method of claim 1, comprising administering an intraocular pressure decreasing amount or ocular accommodation improving amount of a compound of the formula I, wherein R<sup>c</sup> is amino, amino(C<sub>1</sub>-C<sub>5</sub>)alkyl, or amino(C<sub>6</sub> or C<sub>10</sub>)aryl, or wherein the amino of any of the three groups can be substituted with

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(a) Ar;

(b) Ar-Z-, Ar-alkyl-Z-, Ar-Z-alkyl, Ar-amino-Z-, Ar-aminoalkyl-Z-, or Ar-oxyalkyl-Z- ; or

(c) formyl or alkanoyl.

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4. The method of claim 1, comprising administering an intraocular pressure decreasing amount or ocular accommodation improving amount of a compound of the formula I, wherein J is S or O, and R<sup>c</sup> is hydrogen, oxo, alkyl, amino, amino(C<sub>1</sub>-C<sub>5</sub>)alkyl or aminophenyl, wherein the amino of the latter three groups can be substituted with

- (a) Ar;
- (b) Ar-Z-, Ar-alkyl-Z-, Ar-Z-alkyl, Ar-amino-Z-, Ar-aminoalkyl-Z-, or  
Ar-oxyalkyl-Z- ; or
- (c) formyl or alkanoyl.

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5. The method of Claim 1, comprising administering an intraocular pressure decreasing amount or ocular accommodation improving amount of a compound of the formula I, wherein J is S, and R<sup>c</sup> is hydrogen, oxo, alkyl, amino, amino(C<sub>1</sub>-C<sub>5</sub>)alkyl or aminophenyl, wherein the amino of the latter three groups can be substituted with

- 10 (a) Ar;
- (b) Ar-Z-, Ar-alkyl-Z-, Ar-Z-alkyl, Ar-amino-Z-, Ar-aminoalkyl-Z-, or  
Ar-oxyalkyl-Z- ; or
- (c) formyl or alkanoyl.

15 6. The method of claim 1, comprising administering an intraocular pressure decreasing amount or ocular accommodation improving amount of a compound of the formula I, wherein the compound is selected from the group consisting of thiazole, 2-amino-4-chlorobenzothiazole, 2,4,5-trimethylthiazole, 2-(3,5-dimethylphenoxy)-N-thiazol-2-yl)acetamide, 2-isobutylthiazole, (4-fluorophenyl)thiazolin-2-ylamine, 2-furyl-  
20 N-[4-(6-methylbenzothiazol-2-yl)phenyl]carboxamide, and 5,5-dimethyl-2-(2-naphthylamino)-4,5,6-trihydrobenzothiazol-7-one.

25 7. The method of claim 1, comprising administering an intraocular pressure decreasing amount or ocular accommodation improving amount of a compound of the formula I, wherein

- d. R<sup>a</sup> and R<sup>b</sup> are
  - 1. independently selected from hydrogen, acylamino, alkanoyl, alkanoylalkyl, alkoxy, alkoxy carbonyl, alkoxy carbonylalkyl, alkyl, alkylamino, amino, ω-alkylenesulfonic acid, carbamoyl, carboxy, carboxyalkyl (which alkyl can be substituted with alkyloxyimino), cycloalkyl, dialkylamino, halo, hydroxy, (C<sub>2</sub>-C<sub>6</sub>)hydroxyalkyl, mercapto, nitro, sulfamoyl, sulfonic acid, alkylsulfonyl, alkylsulfinyl, alkylthio, trifluoromethyl, morpholin-4-yl, thiomorpholin-4-yl, piperidin-1-yl, 4-[C<sub>6</sub> or C<sub>10</sub>]aryl piperidin-1-yl, 4-[C<sub>6</sub> or C<sub>10</sub>]aryl piperazin-1-yl, Ar

- {wherein, consistent with the rules of aromaticity, Ar is C<sub>6</sub> or C<sub>10</sub> aryl or a 5- or 6-membered heteroaryl ring, wherein the 6-membered heteroaryl ring contains one to three atoms of N, and the 5-membered heteroaryl ring contains from one to three atoms of N or one atom of O or S and zero to two atoms of N, each heteroaryl ring can be fused to a substituted benzene, pyridine, pyrimidine, pyrazine, pyridazine, or (1,2,3)triazine (wherein the ring fusion is at a carbon-carbon double bond of Ar)}, Ar-alkyl, ArO-, ArSO<sub>2</sub>-, ArSO-, ArS-, ArSO<sub>2</sub>NH-, ArNH, (N-Ar)(N-alkyl)N-, ArC(O)-, ArC(O)NH-, ArNH-C(O)-, and (N-Ar)(N-alkyl)N-C(O)-; or
2. together with their ring carbons form a C<sub>6</sub>- or C<sub>10</sub>- aryl fused ring; or
3. together with their ring carbons form a C<sub>5</sub>-C<sub>7</sub> fused cycloalkyl ring having no double bonds except any fused double bond of the formula I or IA ring, which cycloalkyl ring can be substituted by one or more of the group consisting of alkyl, amino, aminocarbonyl, carboxy, fluoro, or oxo, where multiple substituents are located on different carbon atoms of the cycloalkyl ring, except in the case of alkyl and fluoro substituents, which can be located on the same or different carbon atoms; or
4. together with their ring carbons form a fused 5- or 6-membered heteroaryl ring, wherein the 6-membered heteroaryl ring contains one to three atoms of N, and the 5-membered heteroaryl ring contains from one to three atoms of N or one atom of O or S and zero to two atoms of N; or
5. together with their ring carbons form a fused five to six membered second heterocycle, wherein the fused heterocycle consists of ring atoms selected from the group consisting of carbon, nitrogen, oxygen, sulfur, and S(O)<sub>n</sub>, wherein n is 1 or 2,
- wherein aryl, Ar, or Ar<sup>Φ</sup> can be substituted with, in addition to any substitutions specifically noted one or more substituents selected from the group of alkyl, amino, dialkylamino, 1-pyrrolidinyl, 4-[C<sub>6</sub> or C<sub>10</sub>]arylpiperazin-1-yl, 4-[C<sub>6</sub> or C<sub>10</sub>]arylpiperidin-1-yl, azetidin-1-yl, morpholin-4-yl, thiomorpholin-4-yl, piperidin-1-yl; and
- heterocycles, except those of Ar and Ar<sup>Φ</sup>, can be substituted with in addition to any substitutions specifically noted one or more substituents selected from acylamino,

alkanoyl, alkoxy, alkoxycarbonyl, alkoxycarbonylalkyl, alkyl, (C<sub>1</sub> to C<sub>3</sub>)alkylenedioxy, alkylamino, alkylsulfonyl, alkylsulfinyl, alkylthio, amino, ArC(O)-, ArO-, Ar-, Ar-alkyl, carboxy, dialkylamino, fluoro, fluoroalkyl, difluoroalkyl, hydroxy, mercapto, oxo, sulfamoyl, trifluoromethyl, 4-[C<sub>6</sub> or C<sub>10</sub>]arylpiperidin-1-yl and 4-[C<sub>6</sub> or C<sub>10</sub>]arylpiperazin-1-yl, wherein multiple substituents are located on different atoms of the heterocyclic ring, with the proviso that alkyl, alkoxycarbonyl, and fluoro substituents can be substituted on the same carbon atom of the heterocyclic ring.

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